

WHAT IS CLAIMED IS:

1. A mobile communication terminal with an integrated photographic apparatus, the mobile communication terminal comprising:

5 a body having a front, a back, and at least one side;
a plurality of terminal manipulation devices; and
a display for reproducing an image created by the photographic apparatus having means for optical zoom, wherein the photographic apparatus is mounted on the body of the mobile communication terminal so that the photographic apparatus faces laterally outward from the at
10 least one side.

2. The terminal of claim 1, wherein the photographic apparatus further comprises:

a camera;
a lens having a diameter;
15 a lens cap; and
a housing to receive the lens, the lens cap, and the camera, wherein the housing has an inner surface.

3. The terminal of claim 2, wherein the lens cap is ring shaped and has an internal
20 diameter sufficiently large so that a transmission of an image from the lens to the camera is not affected, the lens cap comprising a plurality of notches to operationally engage with the inner surface of the housing.

4. The terminal of claim 2, wherein the means for optical zoom comprises a rotation handle in operative relationship with the housing such that rotation of the rotation handle results in rotation of the housing.

5. The terminal of claim 4, wherein the camera is cylindrical in shape and comprises:

an anterior surface on which a lens hole is formed; and
a circular exterior surface on which a screw thread is formed.

6. The terminal of claim 5, wherein the housing is cylindrical in shape and comprises:

an anterior opening having diameter less than the diameter of the lens;
a posterior opening having a diameter sufficient for the housing to receive the lens, the lens cap, and the camera; and

a screw thread formed on the inner surface of the housing to engage the screw thread formed on exterior surface of the camera, wherein rotation of the housing results in rotation of the camera, thereby moving the camera longitudinally within the housing.

7. The terminal of claim 6, wherein a method to operate the terminal comprises the steps of:

rotating the rotation handle to zoom a subject to be photographed; and
manipulating one or more devices of the plurality of terminal manipulation devices to photograph the subject.

8. The terminal of claim 2, wherein the means for optical zoom comprise:

a controlling unit;

a motor;

a drive shaft having an anterior and posterior ends, wherein the posterior end is

5 operatively connected to the motor so that the motor rotates the drive shaft;

a pinion connected to the anterior end of the drive shaft; and

a rack affixed to the housing and in operational relationship with the pinion so that

rotation of the pinion results in longitudinal movement of the housing.

10 9. The terminal of claim 8, wherein the camera is cylindrical in shape and comprises:

an anterior surface on which a lens hole is formed; and

a circular exterior surface on which a plurality of longitudinal grooves is formed.

15 10. The terminal of claim 9, wherein the housing is cylindrical in shape and comprises:

an anterior opening having diameter less than the diameter of the lens;

a posterior opening having a diameter sufficient for the housing to receive the lens, the lens cap, and the camera; and

20 a plurality of longitudinal protrusions formed on the inner surface of the housing to engage with the plurality of grooves formed on exterior surface of the camera.

11. The terminal of claim 9, wherein a method to operate the terminal comprises the steps of:

manipulating one or more devices of the plurality of terminal manipulation devices to send a zoom order to the controlling unit;

sending a command to the motor to adjust the distance between the lens and the camera according to the zoom order; and

5 manipulating one or more devices of the plurality of terminal manipulation devices to photograph a subject.

12. The terminal of claim 9, wherein the means for optical zoom further comprise a sensor situated adjacent to the photographic apparatus so that the sensor and the photographic
10 apparatus are congruent.

13. The terminal of claim 12, wherein a method to operate the terminal comprises the steps of:

sensing a subject to be photographed;

15 measuring a distance between the subject and the photographic apparatus;

sending a signal to a controlling unit, wherein the signal comprises the measured distance;

comparing the measured distance with a preset optimum distance;

outputting a command to the motor to operate so that the photographic apparatus is
20 zoomed to a setting that corresponds to the preset optimum distance; and

manipulating at least one of the plurality of terminal manipulation devices to photograph the subject.

14. The method of claim 13, further comprising the step of:

outputting a command to the motor so that the photographic apparatus is optimally zoomed in a first direction, if the measured distance is greater than the preset optimum distance.

15. The method of claim 13, further comprising the step of:

5 outputting a command to the motor so that the photographic apparatus is optimally zoomed in a second direction, if the measured distance is less than the preset optimum distance.

16. The terminal of claim 1, wherein the body further comprises:

a lower body;

10 an upper body; and

a hinge that rotatively connects the lower body to the upper body, wherein the photographic apparatus is installed facing outwardly from a lateral side of the hinge.

17. A folding-type mobile communication terminal comprising:

15 an upper body having a display;

a lower body having a plurality of keypads;

a hinge that rotatively connects the lower body to the upper body; and

an optical zoom camera installed facing outwardly from a lateral side of the hinge.

20 18. The terminal of claim 17, wherein the optical zoom camera comprises:

a cylindrically shaped housing comprising:

an anterior opening having diameter less than the diameter of a lens;

a posterior opening having a diameter sufficient for receiving the lens, a lens cap, and a camera; and

an inner surface;

a cylindrically shaped camera having an anterior surface, on which a lens hole is formed,
and a circular exterior surface;

a ring-shaped lens cap having an internal diameter sufficiently large so that a
5 transmission of an image from the lens to the camera is not affected, the lens cap comprising a
plurality of notches to operationally engage with the inner surface of the housing; and
a zoom lens situated adjacent to the anterior opening of the housing.

19. The terminal of claim 18, further comprising:

10 a cylindrically shaped handle concentric and in operative relationship to the housing such
that rotation of the handle results in rotation of the housing.

a first screw thread formed on the circular exterior surface of the camera; and

a second screw thread formed on the inner surface of housing, wherein the second screw
thread is engaged to the first thread so that rotation of the housing results in rotation of the
15 camera, thereby moving the camera longitudinally within the housing.

20. The terminal of claim 19, wherein a method of operating the terminal comprises
the steps of:

rotating the handle to zoom a subject to be photographed; and
20 pressing one or more of the keypads to photograph the subject.

21. The terminal of claim 18, further comprising:

a controlling unit;

a motor;

a drive shaft having an anterior and posterior ends, wherein the posterior end is
operatively connected to the motor so that the motor rotates the drive shaft;
a pinion connected to the anterior end of the drive shaft;
a rack affixed the to the housing and in operative relationship with the pinion so that
5 rotation of the pinion results in longitudinal movement of the housing;
a plurality of grooves formed on the exterior surface of the camera; and
a plurality of longitudinal protrusions formed on the inner surface of the housing so as to
engage the plurality of grooves formed on exterior surface of the camera.

10 22. The terminal of claim 21, wherein a method of operating the terminal comprises
the steps of:

pressing one or more of the keypads to send a zoom order to the controlling unit;
sending a command to the motor to adjust the distance between the lens and the camera
according to the zoom order; and
15 pressing one or more of the keypads to photograph a subject.

23. The terminal of claim 21, further comprising sensor installed on a side surface of
the lower body such that the sensor and the optical zoom camera are congruent.

20 24. The terminal of claim 23, wherein a method of operating the terminal comprises
the steps of:

sensing a subject to be photographed;
measuring a distance between the subject and the optical zoom camera;

sending a signal to a controlling unit, wherein the signal comprises the measured distance;

comparing the measured distance with a preset optimum distance;

outputting a command to the motor to operate so that the optical zoom camera is zoomed

5 to the preset optimum distance;

maximally zooming the optical zoom camera if the measured distance is greater than the preset optimum distance;

minimally zooming the optical zoom camera if the measured distance is less than the preset optimum distance; and

10 pressing one or more of the keypads to photograph the subject.

25. An optical camera configured to be installed in a mobile device so that the optical camera faces outwardly from a lateral side of the device, the optical camera comprising:

a cylindrically shaped housing comprising:

15 an anterior opening having diameter less than the diameter of a lens;

a posterior opening having a diameter sufficient for receiving the lens, a lens cap, and a camera; and

an inner surface;

a cylindrically shaped camera having an anterior surface, on which a lens hole is formed,

20 and a circular exterior surface;

a ring-shaped lens cap having an internal diameter sufficiently large so that a transmission of an image from the lens to the camera is not affected, the lens cap comprising a plurality of notches to operationally engage with the inner surface of the housing;

a zoom lens situated adjacent to the anterior opening of the housing; and

a means for optical zoom.

26. The camera of claim 25, wherein the means for optical zoom comprises:

a screw head formed on the circular exterior surface of the cylindrically shaped camera;

5 a screw thread formed on the inner surface of the housing to engage the screw thread
formed on exterior surface of the camera, wherein rotation of the housing results in rotation of
the camera, thereby moving the camera longitudinally within the housing; and

a rotation handle in operative relationship with the housing such that rotation of the
rotation handle results in rotation of the housing.

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27. The camera of claim 25, wherein the means for optical zoom comprises:

a plurality of longitudinal grooves formed on the circular exterior surface of the
cylindrically shaped camera;

15 a plurality of longitudinal protrusions formed on the inner surface of the housing to
engage with the plurality of grooves formed on exterior surface of the camera;

a controlling unit manipulated by at least one of a plurality of terminal manipulation
devices;

a motor operated by at least one signal transmitted from the controlling unit;

20 a drive shaft having an anterior and posterior ends, wherein the posterior end is
operatively connected to the motor so that the motor rotates the drive shaft;

a pinion connected to the anterior end of the drive shaft; and

a rack affixed to the housing and in operational relationship with the pinion so that
rotation of the pinion results in longitudinal movement of the housing.

28. The camera of claim 25, wherein the means for optical zoom comprises:
a plurality of longitudinal grooves formed on the circular exterior surface of the
cylindrically shaped camera;
a plurality of longitudinal protrusions formed on the inner surface of the housing to
5 engage with the plurality of grooves formed on exterior surface of the camera;
a sensor situated on the device and adjacent to the camera so that the sensor and the
camera are congruent.
a controlling unit manipulated by at least one signal received from the sensor;
a motor operated by at least one signal transmitted from the controlling unit;
10 a drive shaft having an anterior and posterior ends, wherein the posterior end is
operatively connected to the motor so that the motor rotates the drive shaft;
a pinion connected to the anterior end of the drive shaft; and
a rack affixed to the housing and in operational relationship with the pinion so that
rotation of the pinion results in longitudinal movement of the housing.

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29. An optical camera configured to be installed in a mobile communication device,
the optical camera comprising:

a photographic apparatus mounted on the device such that the photographic apparatus
faces outwardly from a lateral side of the device.

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30. The optical camera of claim 29, further comprising means for optical zoom.